Features

- High Efficiency (Up to 91%)
- Active Power Factor Correction (0.95 Typical)
- Constant Current Output
- Lightning Protection
- Dimming Function
- All-Round Protection: OVP, SCP, OTP
- Waterproof (IP67) and Damp & Wet Location

E328335

Description

The ESC-150SxxxDT(ST) series operate from a 249 ~ 528 Vac input range. They are designed to be highly efficient and highly reliable. Features include dimming control, over voltage protection, short circuit protection and over temperature protection.

Models

Output Current (1)	Input Voltage Range	Output Voltage Range	Max. Output Power	Typical Efficiency (2)	Power Factor		Model Name (3)
					277Vac	480Vac	
580 mA	249 ~ 528 Vac	129~257Vdc	150 W	91%	0.95	0.90	ESC-150S058DT(ST)
700 mA	249 ~ 528 Vac	107~214Vdc	150 W	91%	0.95	0.90	ESC-150S070DT(ST)
1050 mA	249 ~ 528 Vac	71~142Vdc	150 W	90%	0.95	0.90	ESC-150S105DT(ST)
1400 mA	249 ~ 528 Vac	53~107Vdc	150 W	90%	0.95	0.90	ESC-150S140DT(ST)
2100 mA	249 ~ 528 Vac	35~71 Vdc	150 W	90%	0.95	0.90	ESC-150S210DT(ST)
2800 mA	249 ~ 528 Vac	27~54 Vdc	150 W	90%	0.95	0.90	ESC-150S280DT(ST)
3500 mA	249 ~ 528 Vac	21~43 Vdc	150 W	89%	0.95	0.90	ESC-150S350DT(ST)
4200 mA	249 ~ 528 Vac	18~36 Vdc	150 W	89%	0.95	0.90	ESC-150S420DT(ST)

Notes: (1) The output current is adjustable at factory from 50% to 100%.
(2) Measured at full load and 277 Vac input.
(3) A suffix –xxxx may be added to denote variations or modifications to the base product, where x can be any alphanumeric character or blank.

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	249 V	-	528 V	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	1 mA	At 480Vac 60Hz input
Input AC Current	-	-	0.7 A	Measured at full load and 277 Vac input.
	-	-	0.42 A	Measured at full load and 480 Vac input.
Inrush Current	-	-	50 A	At 480Vac input, 25℃ cold start, duration=400 μs, 10%Ipk-10%Ipk.
Inrush Current(I^2t)	-	-	0.35 A^2s	

Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Power Factor	0.94	0.95	-	Measured at full load and 277 Vac
	0.88	0.90	-	Measured at full load and 480 Vac

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Range	-5%		5%	
Output Voltage at No Load I_O = 580 mA I_O = 700 mA I_O = 1050 mA I_O = 1400 mA I_O = 2100 mA I_O = 2800 mA I_O = 3500 mA I_O = 4200 mA	 - - - - - - - -	 - - - - - - - -	 270 V 225 V 155 V 120 V 85 V 65 V 50 V 42 V	
Output Overshoot / Undershoot	-	-	10%	When power on or off.
Line Regulation	-	-	±1%	
Load Regulation	-	-	±3%	
Turn-on Delay Time	-	-	3.0 s	Measured at 277Vac input.
	-	-	3.0 s	Measured at 480Vac input.
Temperature coefficient	-	-	0.03%/°C	Case temperature = 0°C ~Tc max

Note: All specifications are typical at 25 °C unless otherwise stated.

Protection Functions

Parameter	Min.	Typ.	Max.	Notes
Over Temperature Protection-Tc	-	110 °C	-	Auto-recovery. The power supply shall return to normal operation only after the temperature return to normal.
Short Circuit Protection	No damage shall occur when any output operating in a short circuit condition.			

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency I_O = 580 mA I_O = 700 mA I_O = 1050 mA I_O = 1400 mA I_O = 2100 mA I_O = 2800 mA I_O = 3500 mA I_O = 4200 mA	 89% 89% 88% 88% 88% 88% 87% 87%	 90% 90% 89% 89% 89% 89% 88% 88%	 - - - - - - - -	Measured at full load, 480Vac input, 25℃ ambient temperature, after the unit is thermally stabilized. It will be about 1% lower, if measured immediately after startup.

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Efficiency Io = 580 mA Io = 700 mA Io = 1050 mA Io = 1400 mA Io = 2100 mA Io = 2800 mA Io = 3500 mA Io = 4200 mA	 90% 90% 89% 89% 89% 89% 88% 88%	 91% 91% 90% 90% 90% 90% 89% 89%	 - - - - - - - -	Measured at full load, 277Vac input, 25℃ ambient temperature, after the unit is thermally stabilized. It will be about 1% lower, if measured immediately after startup.
MTBF		259,800 hours		Measured at 480Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Life Time		140,000 hours		Measured at 480Vac input, 80% load; Case temperature=60℃ @ Tc point. See life time vs. Tc curve for the details
Case temperature			85℃	
Dimensions Inches (L × W × H) Millimeters (L × W × H)	7.40 × 3.70 × 1.71 188 × 93.9 × 43.5			
Net Weight	-	1300 g	-	

Note: All specifications are typical at 25 °C unless otherwise stated.

Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes
Operating Temperature	-35 °C	-	+65 °C	Humidity: 10% RH to 100% RH See Derating Curve for more details
Storage Temperature	-40 °C	-	+85 °C	Humidity: 5% RH to 100% RH

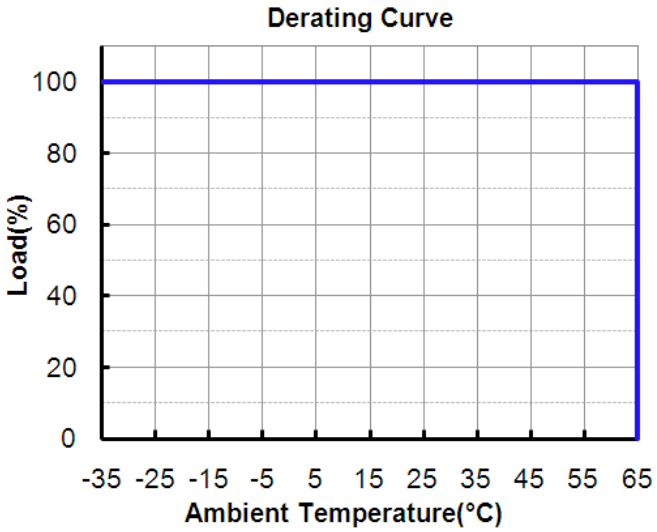
Safety & EMC Compliance

Safety Category	Standard
UL/CUL	UL8750, UL1012, CAN/CSA-C22.2 No. 223-M91, CSA-C22.2 No. 107.1-01,
CE	EN 61347-1,EN61347-2-13
EMI Standards	**Notes**
EN 55015	Conducted emission Test & Radiated emission Test
FCC Part15	ANSI C63.4:2009 Class B
EMS Standards	**Notes**
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 4 kV, line to earth 6 kV

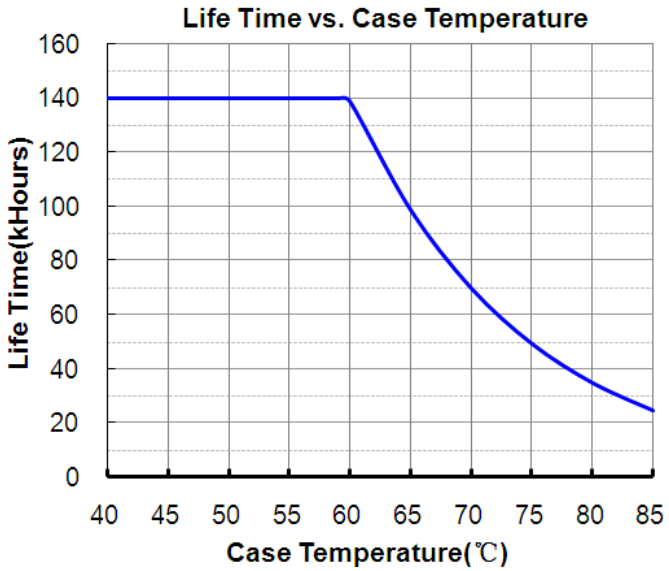
Safety & EMC Compliance (Continued)

EMS Standards	Notes
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test
EN 61000-4-11	Voltage Dips

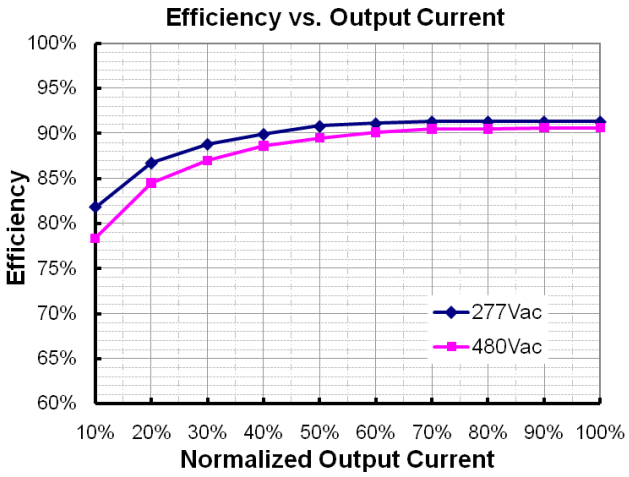
Derating Curve

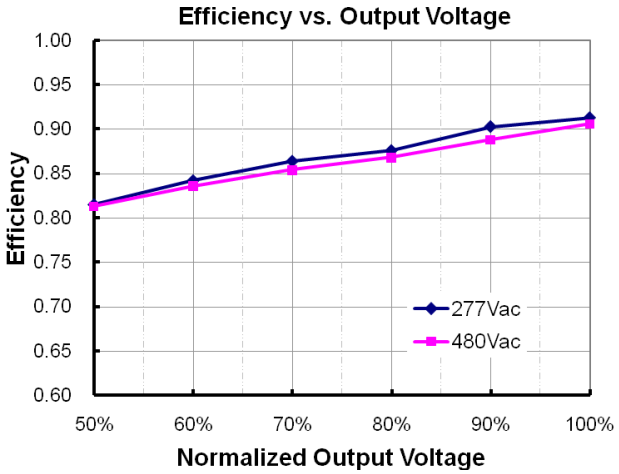


Life Time vs Case Temperature Curve

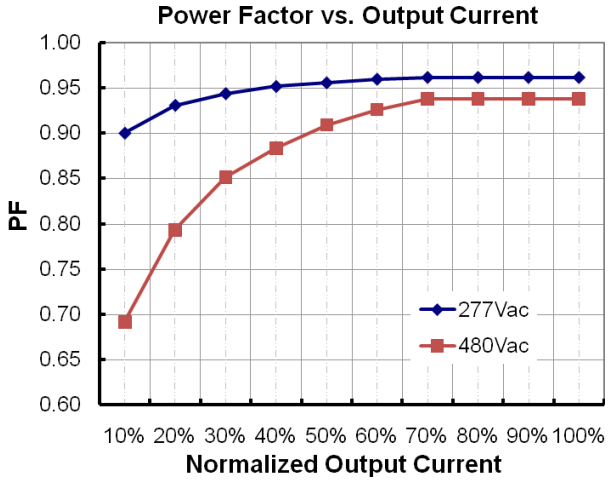


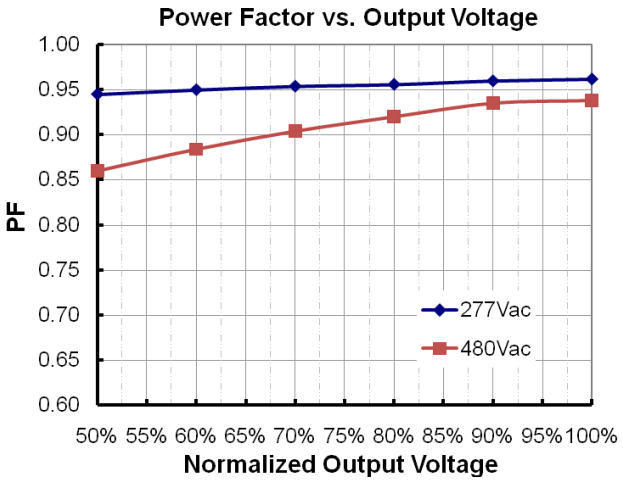
Efficiency vs Load (580mA Model)





Power Factor Characteristics

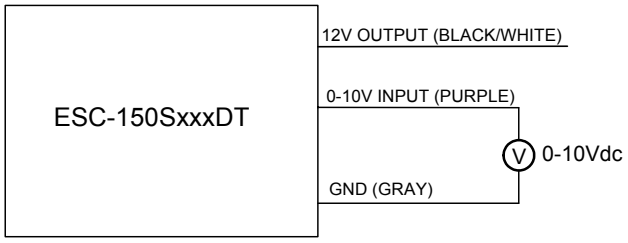


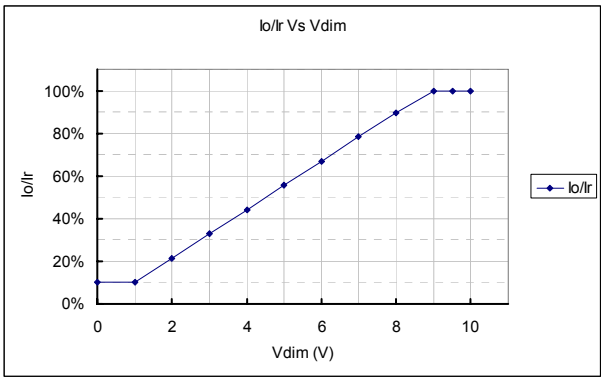


Dimming Control (On secondary side)

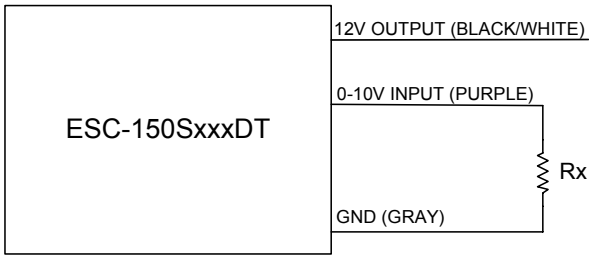
Parameter	Min.	Typ.	Max.	Notes
12V output voltage	10.8 V	12 V	13.2 V	
12V output source current	0 mA	-	20 mA	
Absolute maximum voltage on the 0~10V input pin	-2 V	-	15 V	
Source current on 0~10V input pin	-	200 uA	-	

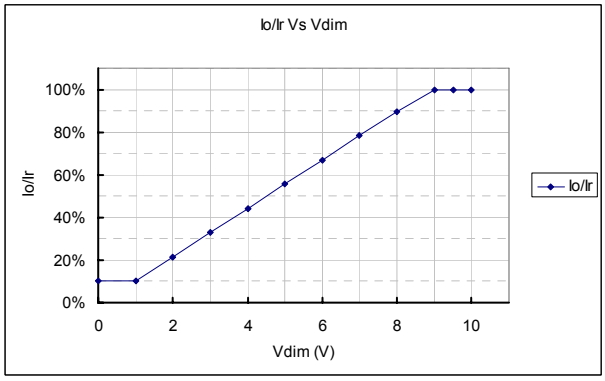
The dimmer control is operated from an input signal of 1 – 10 Vdc. Recommended implementations are provided below.





Implementation 1: DC input





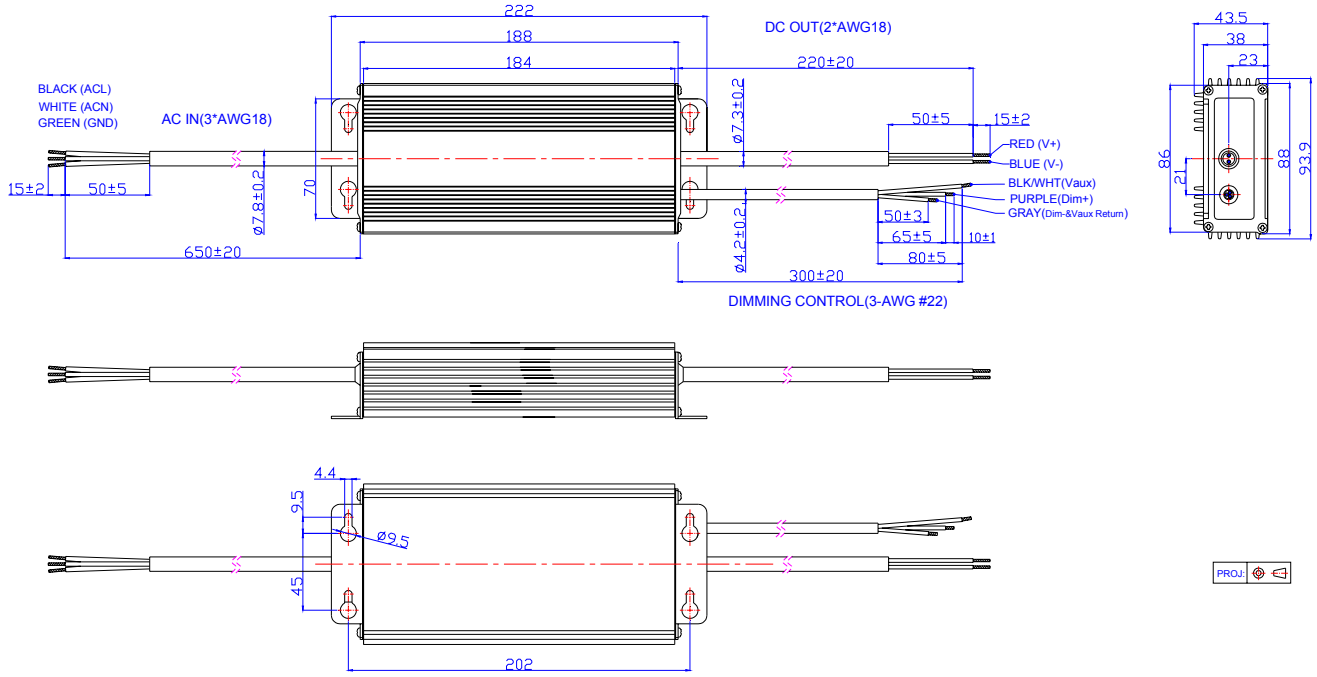
Implementation 2: External resistor

Notes:

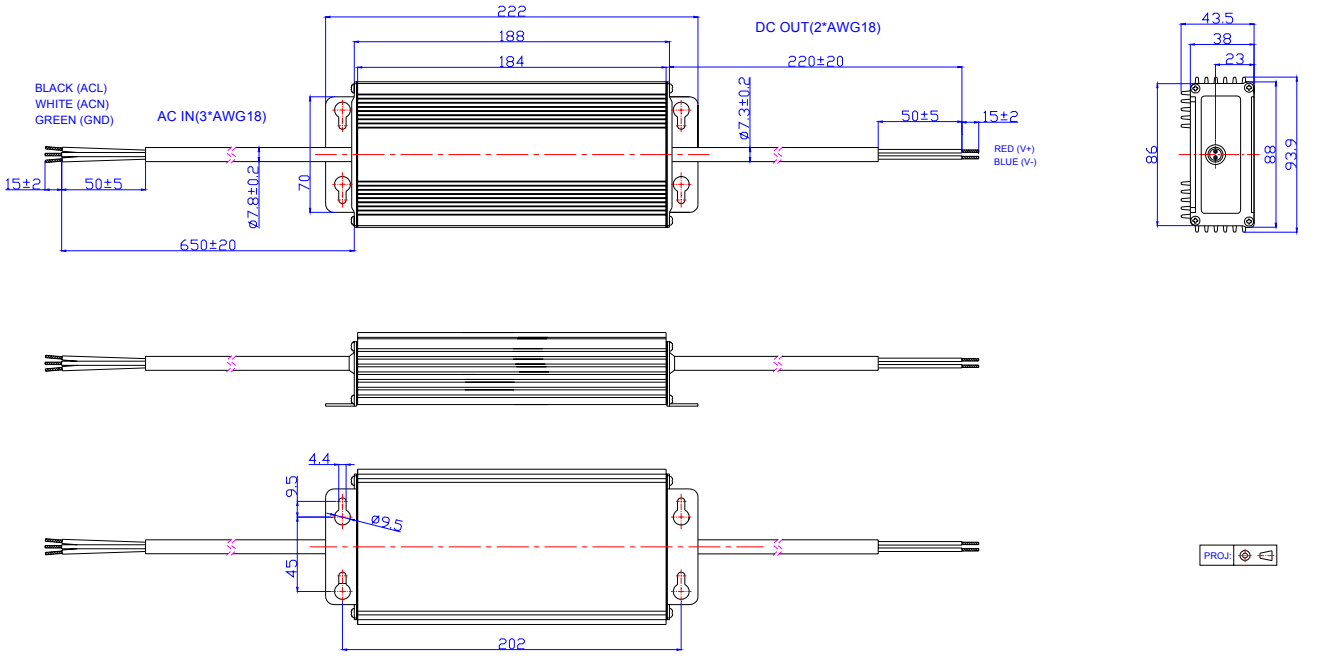
1. Io is actual output current and Ir is rated current without dimming control.
2. For the driver to operate properly, the load voltage must be maintained above the minimum voltage threshold (approx. 50% of the max. output voltage for any given model).
3. If the output voltage is maintained above 50% of the maximum output voltage, the dimming control may be operated over the entire 1-10V range with output current varying from 10% to 100% of Ir.
4. The dimming signal is allowed to be less than 1V, however, when it for 0-1V, the output current is 10%Ir.
5. Do not connect the GND of dimming to the output; otherwise, the LED driver can not work normally.

Mechanical Outline

ESC-150SxxxDT



ESC-150SxxxST



RoHS Compliance

Our products comply with the European Directive 2002/95/EC, calling for the elimination of lead and other hazardous substances from electronic products.

Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2011-10-10	A	Datasheet Release	/	/
2011-10-11	B	Derating Curve, Life time PF, EFF Curve	/	Update
2011-10-19	C	Output Voltage at No Load I_O = 700 mA I_O = 2800 mA	220 V 60 V	225 V 65 V
2011-12-28	D	Life Time	/	Update
2012-01-17	E	ESC-150S210ST(DT) added	/	New model added
2012-06-05	F	Notes of Life time	/	Updated
		Max Output Voltage of ESC-150S058DT	258 V	257 V
2012-7-17	G	Max Case Temperature	/	Updated
2012-7-30	H	Mechanical Outline-Wire diameter added	/	Updated
		Min PF be added in Input Specifications	/	/
2012-9-26	I	Life time curve	/	Updated -14W max
		MTBF, Life time Typical	/	Added
		Temperature coefficient	/	Added
		Inrush Current (I^2t)	/	Added